

# Trash to Electricity

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## Abstract

In 2009, America generated more than 243 million tons of trash, also known as Municipal Solid Waste (MSW). That generation rate was 275% greater than in 1960 when Americans generated 88.1 million tons of MSW. Today, landfills near urban areas are reaching their capacity and energy prices are soaring. Even after separating out recyclables from MSW, Americans' trash still contains 11 MJ per kg. This energy value is stored as chemical energy in carbon based biomass and un-recyclable plastics. Many types of technologies exist that transform this trash energy into usable electrical energy. The status-quo for turning waste-to-energy is by combustion. There are 76 waste-to-energy combustion plants in the U.S. Another common way to transform waste to energy is by burning methane produced by landfills. Pyrolysis and gasification are two emerging technologies in the waste-to-energy field. These technologies are attractive because they are more controlled processes; therefore, pyrolysis and gasification is better for the environment and allows for greater rate of metal recycling after the process. Additionally, these emerging technologies show the potential to convert MSW into liquid fuels for transportation.